Claims

Claims 1-17 were previously cancelled without prejudice or disclaimer of the subject matter therein. Claims 30-31 and 33 were previously withdrawn by the Applicant without prejudice or disclaimer of the subject matter therein. Claims 32 and 34 have been cancelled without prejudice or disclaimer of the subject matter therein. Claims 18-29 are currently pending and Claim 18 has been amended herein without prejudice or disclaimer of the subject matter thereof.

1-17. (Cancelled).

18. (Presently Amended) A competitive binding assay for detecting aneuploidy in a subject, said method comprising:

(i) producing fluorescently-labeled polynucleotide samples that are representative of the number of each chromosome in said subject;

(ii) producing equivalent, non-aneuploid fluorescently-labeled polynucleotide standards for each chromosome, wherein the sample and the standard have distinct emission spectra;

(iii) mixing said fluorescently-labeled polynucleotide sample and said non-aneuploid fluorescently-labeled polynucleotide standard with a limiting amount of binding agents for each chromosome, wherein said binding agents comprise a polynucleotide that is complementary to said sample and said standard for each chromosome immobilized onto microparticles, and said microparticles for each chromosome are distinct in size and fluorescent label intensity;

(iv) wherein the fluorescent label on said microparticles has a distinct emission spectrum from both said sample and said standard;

(v) wherein the signal from said microparticle in said binding agent is indicative of chromosomal location; ~~wherein the presence of an aneuploidy creates a detectable signal due to~~

~~non-equal binding of said sample and said standard to said binding agent, and~~

(vi) wherein the presence of an aneuploidy is determined by a difference in the detectable signal emitted by said sample or said standard bound to said binding agent; and ~~detecting aneuploidy by comparing the signal caused by the binding of said sample and said sample to said binding agent, said aneuploidy being determined by unequal binding.~~

(vii) wherein the signal from said sample and said binding agent compared to the signal from said standard and said binding agent is indicative of the presence or absence of aneuploidy.

19. (Previously Amended) The assay according to Claim 18, wherein said subject is a diploid organism.

20. (Previously Amended) The assay of Claim 19, wherein said diploid organism is selected from the group consisting of a mammal and a plant.

21. (Previously Amended) The assay of Claim 20, wherein said mammal is selected from the group consisting of a human, a livestock animal and an embryo.

22. (Previously Amended) The assay of Claim 21, wherein said livestock animal is selected from the group consisting of cattle, sheep and horses.

23. (Previously Amended) The assay of Claim 21, wherein said embryo is generated using *in vitro* fertilization.

24. (Previously Amended) The assay of Claim 23, wherein said aneuploidy is detected in said embryo prior to implantation of said embryo.

25. (Previously Amended) The assay according to Claim 24, wherein said sample originates from a blastomere.

26. (Previously Amended) The assay according to Claim 18, wherein said sample and said standard are produced from genomic DNA from a source selected from the group consisting of a somatic cell, a reproductive cell and a gamete.

27. (Previously Amended) The assay of Claim 18, wherein said binding agent comprises a nucleic acid immobilized on a microparticle, said nucleic acid having binding specificity for said sample and said standard.

28. (Previously Amended) The assay according to Claim 27, wherein said microparticles are silica microparticles.

29. (Previously Amended) The assay of Claim 28, wherein said silica microparticles are silanized.